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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,019

03/25/2004

Robert C. West

Q198-US1

2480

Quallion LLC
P.O. Box 923127
Sylmar, CA 91392-3127

7590

02/12/2008

EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

02/12/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/810,019	Applicant(s) WEST ET AL.	
	Examiner Jonathan S. Crepeau	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,9,10,12-14,16,17,19-24,26,27 and 55-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,9,10,12-14,16,17,19-24,26,27 and 55-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1, 3-5, 9, 10, 12-14, 16, 17, 19-24, 26, 27, and 55-61. The rejection of claims 55-61 over West et al. is obviated in view of the declarations filed under 37 CFR 1.131. However the previously indicated allowability is withdrawn in view of the newly discovered reference(s) to Lersch et al. Rejections based on the newly cited reference(s) follow. Prosecution is thus reopened and this action is non-final.

Claim Objections

2. Claim 4 is objected to because of the following informalities: the claim ends in a comma. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. Claims 1, 3-5, 9, 10, 12-14, 16, 17, 19-24, 26, 27, and 55-61 are rejected under 35 U.S.C. 103(a) as being obvious over Lersch et al (U.S. Patent 5,606,077).

The reference teaches a polysiloxane having terminal silicons linked to cyclic carbonate moieties ("R2") and/or polyalkylene oxide moieties ("R5" / "R1") (see column 2; in particular the general formula and lines 20-29 and 60). Additionally, each silicon atom in the polymer backbone may have a cyclic carbonate and/or polyalkylene oxide moiety attached to it. The moieties may also contain an oxygen atom that is bonded to the silicon in the backbone (see col.

7, line 40). As is apparent from the general formula, the polysiloxane may have a molecular weight of less than 3000.

The reference does not expressly teach that the polysiloxane is used as an electrolyte in an electrochemical device, as recited in claims 1 and 55.

However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Lersch et al. would motivate the artisan to use the polymer in such a device. In column 5, line 14, the reference teaches that “due to their high polarities and high refractive indexes, [the inventive polymers] can also be used as new polymeric materials for optical and *electronic applications*” (emphasis added). Additionally, further teachings in column 5 also disclose that the polarity of the polymer can be increased, which is beneficial for certain applications. Furthermore, the Zhu citation on the front of the patent references ionic conductivity of polysiloxanes. These disclosures, taken together, would motivate the skilled artisan to use the polymer of Lersch et al. as an electrolyte in an electrochemical device, in particular a lithium secondary battery. Polysiloxanes are well-known electrolyte materials for these batteries, and the teachings related to ionic conductivity and polar character would motivate the artisan to use the polysiloxanes of Lersch et al. in an electrochemical device. There would be both a reasonable expectation of success and predictability in using these polymers for this application. Accordingly, the “electrochemical device” comprising an “electrolyte” recited in the independent claims would be rendered obvious.

The reference further does not expressly teach the [O]/[Li] ratio as recited in claim 22. However, the polymer may be formulated to contain a large amount of oxygen in the side groups, thereby rendering the claimed oxygen-to-lithium ratio obvious.

Regarding claims 23 and 24, it would be obvious to use the polymer in either a liquid or solid form in the electrochemical device. The disclosure in column 5 of Lersch et al. indicates that the polymers are useable in liquids, but it would also be obvious to employ them as solid electrolytes in batteries since this is a known structure.

Regarding claims 13, 14, 16, 17, 19, 20, and 55-61, which recite specific formulas with cross linkages, it is submitted that this subject matter would also be obvious to the skilled artisan. It is noted that the claimed formulas have a high degree of similarity to the general formula disclosed by Lersch et al., and the polymers of Lersch may be routinely modified to result in polymers encompassed by the claimed formula. Furthermore, regarding the cross linkages (indicated as R4 in the instant claims), it would be obvious to perform cross-linking on the polymer of Lersch et al. Cross-linking is known to increase strength and molecular weight of a material, the former being particularly valuable in a solid electrolyte. Accordingly, the artisan would be motivated to cross-link the polymer of Lersch et al. Regarding claim 26, such cross-linking would result in the claimed "interpenetrating network."

Regarding claim 27, the ionic conductivity may be increased by adding functional groups, and as such the claimed conductivity range is not considered to distinguish over the reference.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Jonathan Crepeau/
Primary Examiner
Art Unit 1745
February 14, 2008